

भारतीय मानक
रेशों से बनी रस्सियाँ — पॉलीएथीलीन —
3- तथा 4-लड़ वाली रस्सियाँ
(तीसरा पुनरीक्षण)

Indian Standard
FIBRE ROPES — POLYETHYLENE —
3- AND 4-STRAND ROPES
(*Third Revision*)

ICS 59.080.50

© BIS 2013

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard (Third Revision) which is identical with ISO 1969 : 2004 'Fibre ropes — Polyethylene — 3- and 4-strand ropes' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Cordage Sectional Committee and approval of the Textile Division Council.

This standard was originally published in 1968 and subsequently revised in 1980 and 1989. The third revision of this standard has been undertaken to harmonize it with the latest version of ISO 1969 : 2004.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their respective places are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 1968 ¹⁾ Fibre ropes and cordage — Terms and definitions	IS 3871 : 2012 Fibre ropes and cordage — Vocabulary (<i>third revision</i>)	Technically Equivalent
ISO 2307 Fibre ropes — Determination of certain physical and mechanical properties	IS 7071 (Parts 1 to 3) : 1989 Ropes and cordages — Methods of physical test (<i>first revision</i>)	do
ISO 9554 : 2010 Fibre ropes — General specification	IS 11928 (Part 1) : 1987 Specification for round slings made of man-made fibre for general service — General requirements	do

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

¹⁾Since revised in 2004.

Indian Standard

**FIBRE ROPES — POLYETHYLENE —
3- AND 4-STRAND ROPES**

(Third Revision)

1 Scope

This International Standard specifies requirements for 3-strand hawser-laid and 4-strand shroud-laid ropes for general service (excluding fittings) made of polyethylene and gives rules for their designation.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1968, *Fibre ropes and cordage — Terms and definitions*

ISO 2307, *Ropes — Determination of certain physical and mechanical properties*

ISO 9554:—¹⁾, *Fibre ropes — General specification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1968 apply.

4 Designation

Fibre ropes shall be designated by:

- the words “fibre rope”;
- the number of this International Standard;
- the construction type of rope (see Clause 5);
- the reference number of the rope;
- the material from which the rope is made.

EXAMPLE Designation of a 4-strand shroud-laid rope (type B) with a linear mass of 802 ktex corresponding to the reference number 40 made of polyethylene (PE):

Fibre rope ISO 1969 - B - 40 – PE.

1) To be published. (Revision of ISO 9554:1991)

5 General requirements

5.1 Polyethylene ropes shall be made in one of the following constructions:

- type A: 3-strand hawser-laid rope (see Figure 1);
- type B: 4-strand shroud-laid rope (see Figure 2).

5.2 Construction, manufacture, lay, labelling, packaging, invoicing and delivery lengths shall conform to ISO 9554.

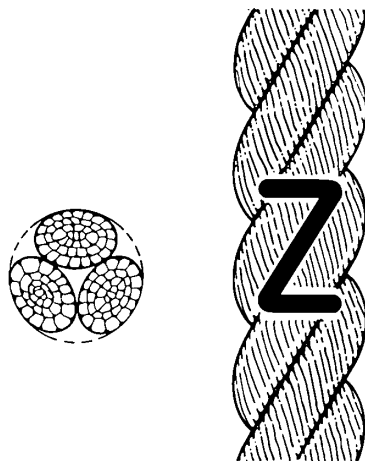


Figure 1 — Shape of a 3-strand hawser-laid rope (type A)

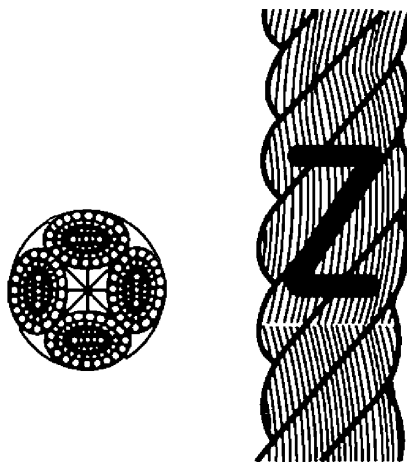


Figure 2 — Shape of a 4-strand shroud-laid rope (type B)

6 Physical properties

Linear density and minimum breaking force shall conform to Tables 1 and 2.

Table 1 — Linear density and minimum breaking force of 3-strand hawser-laid polyethylene ropes (type A)

Reference number ^a	Linear density ^{b, c}		Minimum breaking force ^{d, e, f}
	Nominal ktex	Tolerance %	
4	8,02	± 10	1,88
4,5	10,1		2,36
5	12,5		2,89
6	18,0		4,10
8	32,1		7,11
9	40,6		8,91
10	50,1	± 8	10,9
12	72,1		15,5
14	98,2		20,9
16	128	± 5	27,0
18	162		33,8
20	200		41,3
22	242		49,8
24	289		58,8
26	339		68,4
28	393		79,2
30	451		90,3
32	513		102
36	649		128
40	802		157
44	970		188
48	1 150		222
52	1 350		259
56	1 570		299
60	1 800		341
64	2 050		386
72	2 600		484
80	3 210		592
88	3 880		711
96	4 620		839

^a The reference number corresponds to the approximate diameter in millimetres.

^b The linear density (in kilotex) corresponds to the net mass per length of the rope, expressed in grams per metre or in kilograms per thousand metres.

^c The linear density is under reference tension and is measured as specified in ISO 2307.

^d The breaking forces quoted above relate to new dry and wet ropes.

^d Minimum values stated in individual standards shall be reduced by 10 % in the case of a rope with eye-spliced terminations.

^f A force determined by the test methods as specified in ISO 2307 is not necessarily an accurate indication of the force at which that rope might break in other circumstances and situations. Type and quality of termination rate of force application, prior conditioning and previous force applications to the rope can significantly influence the breaking force. A rope bent around a post, capstan, pulley or sheave might break at a significantly lower force. A knot or other distortion in a rope might significantly reduce the breaking force.

Table 2 — Linear density and minimum breaking force of 4-strand shroud-laid polyethylene ropes (type B)

Reference number ^a	Linear density ^{b, c}		Minimum breaking force ^{d, e, f}
	Nominal ktex	Tolerance %	
10	50,1	± 8	9,81
12	72,1		14,0
14	98,2		18,8
16	128	± 5	24,3
18	162		30,4
20	200		37,2
22	242		44,8
24	289		52,9
26	339		61,6
28	393		71,3
30	451		81,3
32	513		91,8
36	649		115
40	802		141
44	970		169
48	1 150		200
52	1 360		233
56	1 570		269
60	1 800		307
64	2 050		347
72	2 600		436
80	3 210		533
88	3 880		640
96	4 620		755

^a The reference number corresponds to the approximate diameter in millimetres.

^b The linear density (in kilotex) corresponds to the net mass per length of the rope, expressed in grams per metre or in kilograms per thousand metres.

^c The linear density is under reference tension and is measured as specified in ISO 2307.

^d The breaking forces quoted above relate to new dry and wet ropes.

^e Minimum values stated in individual standards shall be reduced by 10 % in the case of a rope with eye-spliced terminations.

^f A force determined by the test methods as specified in ISO 2307 is not necessarily an accurate indication of the force at which that rope might break in other circumstances and situations. Type and quality of termination rate of force application, prior conditioning and previous force applications to the rope can significantly influence the breaking force. A rope bent around a post, capstan, pulley or sheave might break at a significantly lower force. A knot or other distortion in a rope may significantly reduce the breaking force.

7 Marking

The marking shall be carried out in accordance with ISO 9554:—²⁾, Clause 6.

2) To be published. (Revision of ISO 9554:1991)

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: TXD 09 (0864).

Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

Website: www.bis.org.in

Regional Offices:

Telephones

Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 2323 7617 2323 3841
Eastern	: 1/14, C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160022	{ 260 3843 260 9285
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

Branches: AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. DEHRADUN. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAJKOT. THIRUVANATHAPURAM. VISAKHAPATNAM.